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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,966	08/14/2006	Peter Le Lievre	GRI-2.004.PCT.US	8614
22874	7590	08/05/2008		
GANZ LAW, P.C. P O BOX 2200 HILLSBORO, OR 97123			EXAMINER MASHRUWALA, NIKHIL P	
			ART UNIT 3749	PAPER NUMBER
			MAIL DATE 08/05/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/597,966	Applicant(s) LE LIEVRE, PETER	
	Examiner NIKHIL MASHRUWALA	Art Unit 3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/14/29006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/14/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The words 'of the order of' used in both these claims are not proper. The applicant is requested to delete this wording.
3. Claims 2 and 3 recites the limitation "ratio" in diameter of each absorber tube to the dimension of the trough aperture. There is insufficient antecedent basis for this limitation in the claim. The applicant is requested to recite the limitation of "ratio" in independent claim 1.

Claim Rejections - 35 USC § 103

4. Claims 1-17 are rejected under 35 U.S.C. 103(a) as obvious over US patent no 4,505,260 of Metzger in views of US patent no 5,860,414 of Steinmann and US patent no 4,416,264 of Herrick et al.

For claim 1, Metzger discloses a solar collector 10 per fig 1, that is arranged to be located at a level above a field of reflectors 20 & 22 and to receive solar radiation 18 reflected from reflectors within the field; the collector structure 10 comprising an inverted trough 28 and located within the trough 40, a plurality of longitudinally extending absorber tubes 14 (& 14' per fig 5) that, in use, are arranged to carry a heat exchange fluid 32, the absorber tubes 14 (& 14') being supported side-by-side within the trough

28 and each absorber tube 14 having a diameter that is small relative to the aperture 16 of the trough (see fig 1 & 5 for size of aperture and diameter of tube 14). Metzger does talk about mounting of collector mirror 14 along with the reflectors 20, 22 with their axes substantially parallel per fig 2 (see col 2, lines 24-40 for mounting) but does not disclose a collector structure. Steinmann discloses a solar collector structure/frame 18 having support 28 per fig 1. It would have been obvious to a person of ordinary skill in the art to provide such a frame/structure to Metzger in view of Steinmann so as to get relative moving movement to the solar collector with respect to the reflector/base. Moreover, Metzger discloses two tubes, installed side-by-side per fig 5, where as solar collector of Herrick per fig 2 discloses a series of collector tubes 14 installed side-by-side in a trough 13 having much smaller tube diameter and it would be obvious to a person of ordinary skill in the art to modify the solar collector of Metzger in the teaching of Herrick so as to get series of side-by-side collector tubes in order to efficiently used the collecting surface of all the tubes together.

For claims 2-5, Metzger (also Steinmann) discloses small diameter of the collector tube 14 with respect to the aperture 16 of the trough 28 per fig 1. Herrick discloses much smaller diameter of the collector tubes 14 with respect to the aperture size of the trough 11. Herrick also discloses glass tube diameter to be between 1 cm to 10 cm depending upon the mechanical strength and its wall thickness (see col 2, lines 38-43). From fig 2 it seems the ration the ratio of tube diameter to the aperture size of the trough would be around 1:10 which is consider to be close to the range of 0.01:1.00 to 0.10:1.00 or ratio of the diameter of each absorber tube 14 to the dimension of trough

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aperture 11 would be 0.03:1.00. It would be also a choice in design in purview of one of ordinary skill in the art per MPEP 2144.04 to have number of absorber tubes to be about ten to thirty (or about sixteen) supported side-by-side within the trough.

For claims 6-7 and 9-10, Metzger discloses collector tube 14 to be preferably of metal (col 2, lines 37-40) with a dark or black color or coating for optimum absorption of the radiant energy. The collector assembly of Metzger is obvious to be considered to have inverted trough 28 is located in space below the roof. Metzger discloses the inverted trough 28 is insulated 42 from outside.

For claim 8, Metzger does not disclose the absorber tubes are freely supported by a series of rotatable support members which extend orthogonally with respect to the tubes. Steinmann discloses a mirror frame 18 to support the rotating struts 28 per fig 1. It would be obvious to a person of ordinary skill in the art to provide such rotating support to the collector frame structure of Metzger in the teaching of Steinmann so as to get rotatable movement of the collecting mirror assembly extending orthogonally with respect to the tubes.

For claims 11-13, Metzger discloses the transparent window 16 inside inverted trough 28 so as to create a heat confirming cavity within the trough. It would be merely a choice in design in purview of an ordinary skill in the art to select flexible plastic material for the window 16 of the inverted trough 28 so that the reflected radiant rays 18 can be entered into the collector tube 14. The heat of the radiant solar rays 18 are considered to pressurize the cavity inside the window 16 and to inflate the window 16 in direction away from the absorber tubes 14.

For claims 14-15, Metzger discloses a flow valve 46 (see fig 2) to control heat exchange fluid 36 through the absorber tubes 14(& 14') and another flow valve 50 along with venturi 36 formed at the end of the absorber tube 14 would be considered to provide selection of channeling the heat exchanger fluid 32.

For claims 16-17, Metzger discloses the absorber tubes 14(& 14') to be extended along the full row as single length of tubing per figs 1 & 5. Metzger does not disclose a collector structure being connected together co-linearly to form a row of the structures. The solar collector support structure 28 and frame 18 per fig 1 of Steinmann discloses row of such co-linearly connected collector assemblies to form a single row of the structure.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The US patents of Metzger, Steinmann and Herrick discloses the state of the art in a multi-tube solar collector structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NIKHIL MASHRUWALA whose telephone number is (571)270-3519. The examiner can normally be reached on Monday thru Friday- 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nikhil Mashruwala/
Examiner, Art Unit 3749

/Steven B. McAllister/
Supervisory Patent Examiner, Art Unit 3749